CLAIMS

What is claimed is:

1. A method of lapping an air bearing surface to provide a desired surface dimension, comprising:

(a) providing a non-abrasive lapping plate with a plurality of grooves, and a magnetic transducer having an air bearing surface with electrical components embedded therein;

(b) supporting the magnetic transducer such that the air bearing surface is exposed;

(c) dispensing a non-abrasive liquid between the air bearing surface and the lapping plate; and

(d) contacting the air bearing surface with the lapping plate such that the air bearing surface is lapped solely by the grooves in the lapping plate, and wherein the electrical components are lapped such that they are substantially uniform in dimension relative to the air bearing surface.

2. The method of claim 1 wherein step (d) comprises rotating the lapping plate relative to the air bearing surface.

3. The method of claim 1 wherein step (a) comprises forming the grooves in the lapping plate in configurations of pericycloids, epicycloids, hypocycloids, and circles.

4. The method of claim 1, further comprising the step of interrupting a planarity of a lapping surface of the lapping plate with the grooves in the lapping plate surface such that a high percentage of lapping surface engagement is provided by the grooves to reduce a hydrodynamic film from the liquid.

5. The method of claim 1 wherein step (a) comprises providing the grooves in approximately 0 to 5 % of a surface of the lapping plate.

6. A lapping plate for lapping a workpiece having an air bearing surface with electrical components embedded therein to provide a desired surface dimension thereof, comprising:

a non-abrasive lapping plate having a lapping surface with a plurality of grooves therein, wherein when a non-abrasive liquid is dispensed between an air bearing surface of a workpiece and the lapping plate, the lapping plate contacts the air bearing surface such that the air bearing surface is lapped solely by the grooves in the lapping plate, and wherein electrical components embedded within the air bearing surface are lapped such that they are substantially uniform in dimension relative to the air bearing surface.

7. The lapping plate of claim 6 wherein the grooves in the lapping plate are in configurations of pericycloids, epicycloids, hypocycloids, and circles.

8. The lapping plate of claim 6 wherein a planarity of the lapping surface of the lapping plate is interrupted with the grooves such that a high percentage of lapping surface engagement is provided by the grooves to reduce a hydrodynamic film from the liquid.

9. The lapping plate of claim 6 wherein the grooves comprise approximately 0 to 5 % of the lapping surface of the lapping plate.

10. A system for lapping a workpiece having an air bearing surface with electrical components embedded therein to provide a desired surface dimension thereof, comprising:

a non-abrasive lapping plate having a lapping surface with a plurality of grooves therein;

a support structure for supporting a workpiece such that an air bearing surface thereof is exposed;

a non-abrasive liquid; and wherein

when the non-abrasive liquid is dispensed between the air bearing surface and the lapping plate, the lapping plate contacts the air bearing surface such that the air bearing surface is lapped solely by the grooves in the lapping plate, and wherein the electrical components of the air bearing surface are lapped such that they are substantially uniform in dimension relative to the air bearing surface.

11. The system of claim 10 wherein the grooves in the lapping plate are in configurations of pericycloids, epicycloids, hypocycloids, and circles.

12. The system of claim 10 wherein a planarity of the lapping surface of the lapping plate is interrupted with the grooves such that a high percentage of lapping surface engagement is provided by the grooves to reduce a hydrodynamic film from the liquid.

13. The system of claim 10 wherein the grooves comprise approximately 0 to 5 % of the lapping surface of the lapping plate.